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Database, Humanitarian Demining Accident and Incident, "DDASaccident020" (1997). *Global CWD Repository*. 220.  
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# DDAS Accident Report

## Accident details

<b>Report date:</b> 22/01/2004	<b>Accident number:</b> 20
<b>Accident time:</b> 09:55	<b>Accident Date:</b> 20/12/1997
<b>Where it occurred:</b> Sabie, Moamba District, Maputo Province	<b>Country:</b> Mozambique
<b>Primary cause:</b> Unavoidable (?)	<b>Secondary cause:</b> Management/control inadequacy (?)
<b>Class:</b> Excavation accident	<b>Date of main report:</b> 30/01/1998
<b>ID original source:</b> IND 000136	<b>Name of source:</b> CND/IND/MCHM
<b>Organisation:</b> MECHEM	
<b>Mine/device:</b> PMD-6 AP blast	<b>Ground condition:</b> hard
<b>Date record created:</b> 12/01/2004	<b>Date last modified:</b> 22/01/2004
<b>No of victims:</b> 1	<b>No of documents:</b> 4

## Map details

<b>Longitude:</b> 32° 15' 26" E	<b>Latitude:</b> 25° 18' 44" S
<b>Alt. coord. system:</b>	<b>Coordinates fixed by:</b>
<b>Map east:</b>	<b>Map north:</b>
<b>Map scale:</b>	<b>Map series:</b>
<b>Map edition:</b>	<b>Map sheet:</b>
<b>Map name:</b>	

## Accident Notes

inadequate communications (?)  
mechanical follow-up (?)  
protective equipment not worn (?)  
vegetation clearance problem (?)  
inadequate medical provision (?)  
squatting/kneeling to excavate (?)  
use of pick (?)  
inadequate investigation (?)

## Accident report

A report on the accident prepared for the National authority was made available in November 2000. Made available in English, the following summarises its content.

The group were engaged in following up manually a mechanical clearance made with steel-wheeled vehicles.

The victim was a site supervisor (South African with EOD and bomb disposal background). He was born on 3<sup>rd</sup> April 1954.

The base camp was 17 Km from the demining site. The site had grass 50cm tall, small bushes and ground compacted by the Casspir vehicles during their mechanical "clearance". A large number of PMD-6 mines were found in the area after the Casspirs had passed. These mines were close to the surface and "partly visible".

Using a MineLab detector a deminer found a PMD-6 in his lane and called the victim who helped him start a new lane adjacent to the first. The group's SOPs allowed for detonation at the end of the working day.

When the deminer came alongside the first mine, he located another, and called the victim again. The victim decided to prepare the mines for destruction, took the deminer's "spade" and sent him away. When the deminer reached the safe area the detonation occurred at 09:55.

The local Team Leader tried to make radio contact with his base unsuccessfully. The victim was put on a stretcher and carried in the Casspir vehicle to the base where the paramedic was situated. First medical attention was 15 minutes after the accident. An air CASEVAC was ordered and the helicopter left at 11:15 for Nelspruit Hospital, arriving at 12:15.

**The deminer** stated that the victim has taken his small hoe (enxada) just before the accident.

**The victim** later stated that he was "in the process of preparing the mine" when the accident occurred.



The picture above shows the remains of the victim's peaked cap and spectacles after the blast. His standard prescription spectacles were believed to have provided some eye protection.

## Conclusion

The investigators determined that the accident showed that "mechanical clearance by the help of steel wheeled Casspirs needs an efficient control after it". The mines and detonators "can" still be functional. The real reason for the mine's detonation was unknown. "The used charges include a hidden danger for the person placing them on the mine".

## Recommendations

The investigators recommended that the demining group's procedures for detonating mines after mechanical preparation be reviewed. They also recommended that the paramedic should be on site during clearance and that training should include first-aid/CASEVAC instruction for all personnel at least once every three months.

## Victim Report

<b>Victim number:</b> 33	<b>Name:</b> Name removed
<b>Age:</b> 43	<b>Gender:</b> Male
<b>Status:</b> supervisory	<b>Fit for work:</b> yes
<b>Compensation:</b> not made available	<b>Time to hospital:</b> 2 hours 20 minutes
<b>Protection issued:</b> Not recorded	<b>Protection used:</b> none

### Summary of injuries:

minor Eyes

minor Hearing

severe Arm

severe Chest

severe Eye

severe Face

severe Head

AMPUTATION/LOSS

Arm Above elbow

Leg Above knee

COMMENT: See medical report.

### Medical report

A Casualty report in the accident file stated that the victim had received severe trauma of his left arm and left leg, and "face burns". He arrived at Nelspruit hospital at 12:15 after air CASEVAC.

#### "Nature of injury

L/L under patella blew 90% off

L/U/A blown off completely

Facial burns 20% (partial thickness)

L/Ear badly burned by explosive

Lacerations on face and R/arm

Injunct to L/Eye (semi dilated pupil and Heamatoma)

Vital signs - BP 100/60 Pulse 60

Respiration - shallow

Glasgow Coma Scale - 11 15

Patient in terrible pain and in hypvdeemic shock

**RX to patient**

Patient on scoop supine

ABS done

Primary and secondary survey done.

Stopped bleeding by use of three methods will explain if needed. There was a great loss of hema due to injuries causing it difficult to set up IV lines, cut away was done and fluid replacement took its way.

Airway management was monitored all the time.

All injury to patient was RX to perfection,

**Equipment and medicines used**

6	x	No.6 Trauma bandages
6	x	No.5 Trauma bandages
10	x	Conforming bandages
1	x	Ferna full leg blow up splint
2	x	Pkt of gauze
2	x	Ringers
2	x	Heamcell
2	x	18g canula
2	x	15ml dropper
1	x	strapper oil

O'8 litres per min giving

200mg pethidine Im IV over 20 25 mins

1	x	ET 7.5
1	x	T piece
1	x	Large magils

Dormicum IV 20ml

1	x	cather+bag
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Patient stable and ready for casevac 11:15.

The victim later stated that he regained consciousness on 26<sup>th</sup> December 1997 in hospital. His left arm was amputated 15cm from the shoulder and his left leg above his knee. He sustained "severe burns" on his face and chest. His face, chest and right arm "were lacerated with shrapnel". He also "sustained minor fractures of the skull". On the 8<sup>th</sup> January 1998 when the statement was made he was also suffering from double vision and deafness.

Interviewed in March 2001, the victim was using a lower leg prosthetic that allowed him to drive, and was working for the same demining company in a field management capacity. He was adept at using the stump of his left arm to clamp things against his side and to "oppose" his hand. Cheerful and sociable, he reported that his eyesight had been affected, but that his spectacles compensated. His hearing was noticeably poor.

He mentioned that he had been wearing a back-support following a strain injury and this protected his body during the blast.

## Analysis

The victim did not leave the lane after confirming the presence of the second mine. Unless he was carrying explosives and detonators with him, he did not have an explosive charge to place beside the mine. From this I infer that he was "preparing" the mine for detonation by excavating alongside it, and so the accident is classed as an "Excavation accident". It is possible that he was examining the mines to see why they had not been detonated with the steel-wheels.

The primary cause of the accident is listed as "*Unavoidable*" because it seems that the victim slipped while going about his work, which would be an unavoidable human error. If he tripped on the uncut grass, that would illustrate a failing in the area preparation.

The secondary cause of the accident is listed as a "*Management/control inadequacy*" because there were inadequate communications and Medevac facilities at the site. It could be argued that the steel wheel preparation had also been inadequate and made the risk of injury more likely.

## Related papers

An internal demining group memorandum was included in the file. This stated that at 09:55 the victim slipped and detonated a PMD-6 with his "left side". The paramedic met the victim half way to the base site and he was carried "by Toyota" to the base for air CASEVAC. At 10:09 a cellular phone was used to notify the group's management that they had a "Priority 1" accident.

At 10:40 the helicopter arrived and the patient received "aviation protocol medicine and cauterisation".

A sketch map of the site (on lined paper) was on file.

Photographs of the site showed that the deminers were not cutting the grass as they advanced because the grass in the taped lanes was no different from that in the surrounding areas.

The victim was interviewed in May 2001 while he was at work with the demining group. He was cheerful and willing to speak about the accident. He confirmed that he tripped on undergrowth and fell after preparing a mine for detonation. He landed with his hand on a second mine. His arm and his knee were close together as he fell.

At the time of the interview the victim was using a prosthetic leg with skill. He retained a stump of arm (10-15cm) that he was able to utilise. He drove a car and led a full working and social life.

It was noted that his hearing was poor, and he confirmed this. He also confirmed some loss of vision in one eye as a result of the accident. When asked, he acknowledged some breathing difficulties after the accident.

The victim stressed that protective equipment was available but that he chose not to wear it – believing that it served little purpose in the event of an accident.

## Statements

### Statement 1 - witness

A statement from the deminer who found the mine indicated that he marked the first mine and was told to mark it and continue beyond it, which he did. When he had finished the lane he moved his markers with help from the victim. When he found the second mine he placed a marker and called the supervisor again. Both mines were visible [so did not need excavating]. The supervisor asked for his enxada (hoe) and sent him to the safe area. When the mine exploded the deminer and his partner loaded the victim into the car and drove towards the "hospital".

**Statement 2 – victim**

The victim stated that:

“One of the team members located a mine and reported it to me. I moved to the mine, marked it and was in the process of preparing the mine for countermining with an explosive charge. There was an explosion and I cannot remember anything further.

I regained consciousness on 26<sup>th</sup> December 1997 and was informed that I was in Nelspruit Private Hospital. My left arm was amputated 150mm below the shoulder and my left leg above the knee. I further sustained severe burns in my face and on my chest. My face, chest and right arm were lacerated with shrapnel. I also sustained minor fractures of the skull.

At present I am suffering from double vision as well as deafness.”